

TOPICAL REVIEW: FOR DEBATE

Analysis of the Differences Between the ESVS 2019 and NICE 2020 Guidelines for Abdominal Aortic Aneurysm

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WHAT THIS PAPER ADDS

In this paper, key differences between two recently published guidelines for the diagnosis and management of patients with abdominal aortic aneurysm, the National Institute for Health and Care Excellence (NICE) 2020 guidelines and the European Society for Vascular Surgery (ESVS) 2019 guidelines, are reviewed. Different perspectives (cost-effectiveness vs clinical effectiveness), methodology and quality, assurance processes, and evidence are important in explaining discordant recommendations in the two sets of guidelines. While both guidelines have their merits, the comparison may offer suggestions to further improve the quality and transparency of ESVS guideline processes.

Objective: The aim was to understand why two recently published guidelines for the diagnosis and management of patients with abdominal aortic aneurysm, the National Institute for Health and Care Excellence (NICE) 2020 guidelines and the European Society for Vascular Surgery (ESVS) 2019 guidelines, have discordant recommendations in several important areas.

Methods: A review of the approach, methodology, and evidence used by the two guideline committees was carried out to understand potential reasons for their differing recommendations in their two final published guidelines.

Results: NICE guidelines use a multidisciplinary committee to address a limited number of prospectively identified questions, using rigorous methods heavily reliant on evidence from randomised controlled trials (RCTs) supported by in house economic modelling, with the purpose of providing the best, cost-effective health care in the UK in 46 main recommendations. The ESVS guidelines use an expert committee to encourage clinical effectiveness across a range of European health economies. ESVS guideline topics, but not questions, are prospectively identified, assessment of evidence was less rigorous, and 125 recommendations were made. More up to date evidence searches by the ESVS committee partially underscore the differences in recommendations for screening women. The NICE committee did not consider sex specific analysis or evidence for thresholds for intervention but relied on sex specific modelling to support their advice to use endovascular repair (EVAR) for ruptures in women. Their recommendation to use open repair for ruptured abdominal aortic aneurysms (AAAs) in men aged < 71 years was based on in house economic modelling. NICE recommends an open first strategy for non-ruptured AAA mainly based on earlier RCTs and UK specific economic modelling, while the ESVS guidelines recommend an EVAR first strategy after consideration of modern, but lower quality, evidence from observational studies. Similar reasons explain differences in the recommended treatments of juxtarenal aneurysms.

Conclusion: Differences between the NICE and ESVS guidelines can be explained, at least in part, by their differing perspectives, methodologies, and quality assurance. Future ESVS guidelines may benefit from more multidisciplinary input and prospectively identified questions.

Keywords: Abdominal aortic aneurysm, Aorta, Aneurysm, Guideline

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INTRODUCTION

The preparation of any clinical practice guidelines demands a rigorous and systematic approach, with protocols for peer and patient review of guidelines. Therefore, it may be surprising that there are some very marked differences between the European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines for the Management of Abdominal Aorto-iliac Aneurysms¹ and the 2020 National Institute for Health and Care Excellence (NICE) guideline for Abdominal Aortic Aneurysm: Diagnosis and Management.² However, there are differences in the guideline methodology that may underlie some of the discrepancies.

The aim of this study was to review the methodological differences between the two sets of published guidelines, itemise, summarise the underlying evidence and discuss, and perhaps explain, the key differences between the two sets of guidelines

DIFFERENCES BETWEEN ESVS AND NICE GUIDELINE METHODOLOGY

NICE is a statutory body in the UK with the purpose of optimising health and social care practices.³ NICE takes the initiative in determining when new guidelines are required and invites the Guideline lead, who is skilled in chairing committees and responsible for the scope and quality assurance of the work in hand, to participate. The scope of the guidelines is subject to stakeholder comments, before the main guideline development starts.⁴ Applications for committee membership are solicited through a process of recommendation by relevant professional bodies and open advertisement, with applicants being asked to provide evidence of multidisciplinary team working abilities. A multidisciplinary guideline committee, which includes users (lay members and patients), is constituted and agrees the questions to be addressed.⁴ This committee (with 21 members over its 3–4 year tenure for abdominal aortic aneurysm [AAA] guidelines, including a maximum of three vascular surgeons at any time) meets at regular intervals and is supported by the permanent staff at NICE who undertake literature searches, summarise the evidence using Appraisal of Guidelines for Research and Evaluation (AGREE) principles to provide Grading of Recommendations, Assessment, Development and Evaluations (GRADE; rating evidence as high, moderate, low, or very low), and conduct economic modelling.^{5,6} Apart from literature evidence, a variety of other evidence is used during the formulation of guidelines, including testimony from expert witnesses (practitioners and users) and economic modelling of original and published data. Once formulated, the guidelines are sent out for further stakeholder consultation, revised, and refined as necessary, with final quality assurance provided by NICE staff. The final published guidelines use “NICE recommended” language, rather than GRADE or the European Society of Cardiology grading system (the latter which is used for the ESVS guidelines).^{6,7} There are three levels of certainty in the final recommendations, which are published

as an executive summary. The strongest recommendations, either positive or negative, use the verb “must” or “must not”. Moderate strength recommendations of treatments/interventions that should or should not be offered/advised use the phraseology “offer” or “do not offer”. The weakest recommendations of treatments/interventions that could be considered use the verb “consider”. The detailed reviews of the evidence supporting these recommendations, together with their search strategies, are available as supplementary documents. The aim of the process is to provide the best possible evidence of what works and what it costs, so that cost-effective health care is prioritised.

The ESVS Guidelines Committee (GC) was set up in 2013 with responsibility of producing clinical practice guidelines for the society.⁸ The GC, in consultation with the *European Journal of Vascular and Endovascular Surgery*, takes the initiative in determining when new guidelines are required and invites a Guideline Writing Committee (GWC) chair(s), who together with the GC is responsible for putting together a GWC with experts, mainly ESVS members, from several European countries to gain broad representation: sometimes the committee includes specialists from outside Europe and vascular surgery. The GWC decides internally on the scope of the work (topics to be covered) at the initiation meeting. The ESVS AAA GWC consisted of 16 members, all but one being practising vascular surgeons. The GWC is supported during the work by a member of GC who also acts as coordinator during the review process, and there may be one further meeting of the GWC to discuss the recommendations. The draft AAA guidelines were reviewed by external experts (principally vascular surgeons) from across the world and the 10 members of the GC, to ensure that the recommendations are up to date and reflect current practice and knowledge worldwide. There is no requirement to include patients and other stakeholders during the process or to use additional data modelling. However, for the ESVS 2019 AAA guidelines, the patient perspective was addressed by involving a lay review process followed by a review of the main recommendations by a patient focus group in one European country (the UK).

The overall purpose of ESVS guidelines is to provide best practice principles and standards of care, based on scientific evidence complemented by expert opinion. By summarising and evaluating the best available evidence, recommendations for the evaluation and treatment of patients have been formulated. The ESVS Guidelines use the ESC grading system. For each recommendation, the letter A, B, or C marks the level of current evidence. Each recommendation is subsequently marked as either Class I (“is recommended”), IIa (“should be considered”), IIb (“may be considered”), or III (“is not recommended”), with Class I and III being the strongest recommendations. The recommendations are embedded in reviews of the existing evidence and its evaluation in a contemporary European setting are described in a comprehensive supporting text, which constitutes most of the extensive Guidelines document. Although ESVS guidelines do consider cost effectiveness

Table 1. National Institute for Health and Care Excellence (NICE) and the European Society for Vascular Surgery (ESVS) abdominal aortic aneurysm guidelines methodology compared		
Guideline methodology	NICE 2020²	ESVS 2019¹
Initiation and reason	By NICE to increase health economic benefits in the UK	Guidelines committee, to develop best clinical practice across Europe
Composition of committee	Multidisciplinary, including lay members	Principally vascular surgeons, with optional input from other disciplines
Review questions	Developed prospectively	Topics within the review agreed by committee, then questions posed <i>ad hoc</i> as review develops, covering associated issues, including anaesthesia, management of complications, etc.
Searching the written evidence	Formal searches conducted and eligible evidence graded by NICE staff, and evidence review published. Strong preference to use Cochrane reviews of RCT evidence	Formal searches recommended, no standard methods, no formal record of search criteria, assessment of eligibility and quality
Other evidence	Testimony from invited stakeholders (including patient organisations), economic modelling by NICE staff	Expert opinion and optional review of key draft recommendations by one or more patient groups
Guideline structure	Summary report of GRADE-based recommendations with reasons given in supplementary evidence reviews	Detailed document with many ESC-based recommendations, each recommendation supported by key references
Recommendation language and strength	Must or must not do (strong) Offer or do not offer (moderate) Consider treatment with (weak)	Is or is not recommended (strong) Should be considered (moderate) May be considered (weak)
Review of draft guidelines	Stakeholders by an open process	ESVS Guideline Committee and invited expert reviewers (mainly vascular surgeons)
Publication	On NICE web-site	In EJVES
Update process	Reportedly after 3 y	Reportedly after 4 y

RCT = randomised controlled trial; GRADE = Grading of Recommendations Assessment, Development and Evaluation; ESC = European Society of Cardiology; EJVES = *European Journal of Vascular and Endovascular Surgery*.

aspects, these are not prioritised, partly because the guidelines are designed as an advisory document for a wide variety of different healthcare systems across Europe and where the percentage of the gross domestic product spent on health care ranges from 6% in Latvia to 12% in

Switzerland. Therefore, local adaptations of the recommendations are anticipated.

The key differences in methodology between NICE and ESVS guidelines are summarised in [Table 1](#), and differences in topics are covered in [Table 2](#).

Table 2. The topics associated with recommendations in the National Institute for Health and Care Excellence (NICE) 2020 guideline for Abdominal Aortic Aneurysm: Diagnosis and Management² and the European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines for the Management of Abdominal Aorto-iliac Aneurysms¹	
NICE 2020	ESVS 2019
	Service standards
Diagnosis	Diagnosis and screening
Monitoring and reducing the risk of rupture	Management of patients with small AAA
Predicting and improving surgical outcomes*	
Repairing unruptured aneurysms	Elective AAA repair
	Management of juxtarenal aneurysms
Emergency transfer to regional vascular services	Management of ruptured AAA
Repairing ruptured aneurysms	
Monitoring for complications after EVAR Managing endoleaks after EVAR	Follow up after AAA repair
	Management of iliac artery aneurysm
	Mycotic and inflammatory aneurysms & other problems

AAA = abdominal aortic aneurysm; EVAR = endovascular aortic repair.

* Topics covered in elective AAA repair and juxtarenal aneurysm sections of the ESVS guidelines.

Table 3. Recommendations on screening women for abdominal aortic aneurysm in the National Institute for Health and Care Excellence (NICE) 2020 guideline for Abdominal Aortic Aneurysm: Diagnosis and Management² and the European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines for the Management of Abdominal Aorto-iliac Aneurysms¹

	NICE 2020	ESVS 2019
Recommendation	Consider screening women aged ≥ 70 y with selected risk factors	Population screening is not recommended
Strength	Weak	Moderate
Up to date (searches to)	September 2016	May 2018
Considers benefits, harms, and cost effectiveness	Does not consider harms or sex specific cost effectiveness	Considers all, including their high mortality from elective repair and psychosocial harms

SHOULD WE SCREEN WOMEN FOR AAAs?

The 2020 NICE guidelines have a weak recommendation, 1.1.3, to support the screening of women aged ≥ 70 years, if they are smokers or ex-smokers, if they have chronic obstructive pulmonary disease, another form of occlusive arterial disease, hypertension, or hyperlipidaemia. The committee noted that moderate quality evidence showed that women aged ≥ 70 years had an increased risk of AAA versus women aged < 70 years. Most of the remaining evidence for screening specific subgroups had been graded as low or very low, the exceptions being for hypertension and smoking, where moderate evidence was provided by the Tromsø study.⁹ However, this study recruited subjects for aortic ultrasonography in 1994 (with follow up to 2001), and it is widely recognised that the epidemiology of AAA has changed in the present century.¹⁰ Moreover, the NICE guidelines only searched for evidence up to 29 September 2016 and the committee did not consider the harms of screening women regarding either their high mortality after elective repair or their psychosocial harms. Nevertheless, the committee took the view that opportunistic case finding of women aged ≥ 70 years was likely to be cost effective, as the recommendations allow for more women with AAAs to be identified early, before complications or rupture arise. This was a viewpoint without supporting evidence.

In contrast, in the ESVS guidelines, Recommendation 14 states “Population screening for abdominal aortic aneurysm is not recommended”. This was assigned class III, level B (moderate) evidence, supported by one randomised controlled trial (RCT) published in 2002,¹¹ a 2014 US Preventative Task Force analysis,¹² and a detailed analysis of the clinical benefits, harms, and cost effectiveness of screening published in 2018.¹³

The ESVS guidelines would appear to be more relevant, as they are based on more recent evidence than that used in the NICE guidelines, and evidence that fully considers the harms of screening in women and the cost-effectiveness (Table 3).

Table 4. Recommendations for the threshold for elective abdominal aortic aneurysm repair in women in the National Institute for Health and Care Excellence (NICE) 2020 guideline for Abdominal Aortic Aneurysm: Diagnosis and Management² and the European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines for the Management of Abdominal Aorto-iliac Aneurysms¹

	NICE 2020	ESVS 2019
Recommendation	Consider when ≥ 5.5 cm (inner to inner diameter), symptomatic, or fast growing in men and women	In women, may be considered at ≥ 5.0 cm
Strength	Weak	Weak
Up to date (searches to)	December 2017	May 2018
Considers benefits, harms, and cost effectiveness	Principally considers mortality, without any sex specific analysis	Considers mortality, higher rupture risk, and worse outcomes of elective repair in women

THRESHOLDS FOR INTERVENTION IN WOMEN

The 2020 NICE Guidelines for thresholds for intervention are not sex specific. The committee viewed mortality, not rupture, as the key outcome; used the Cochrane review of four RCTs by Filardo *et al.*¹⁴ as a major source of evidence; but was mindful of the potential harm for high risk patients in whom surgery might be inappropriate if a recommendation to offer (as opposed to consider) surgery when aneurysms reach 5.5 cm was made. Therefore, recommendation 1.5.1 is to consider aneurysm repair for people with an unruptured AAA, if the aneurysm is symptomatic, larger than 4.0 cm, and has grown by more than 1 cm in one year (measured inner-to-inner maximum anterior-posterior aortic diameter on ultrasound), or asymptomatic and ≥ 5.5 cm (measured inner-to-inner maximum anterior-posterior aortic diameter on ultrasound).

The 2019 ESVS guidelines used the same major source of evidence¹⁴ to support their Recommendation 22: “In men, the threshold for considering elective abdominal aortic aneurysm repair is recommended to be ≥ 5.5 cm”. So here the guidelines are in relative harmony. However, for women, for ESVS Recommendation 23 there is a level C (weak) recommendation as follows: “In women with acceptable surgical risk the threshold for considering elective abdominal aortic aneurysm repair may be considered to be ≥ 5.0 cm”. This recommendation is based on the few women included in the randomised trials,¹⁴ the higher risk of aneurysm rupture in women,¹⁵ as well as their higher operative mortality after elective AAA repair.

Therefore, the ESVS guidelines used a wider source of evidence in considering the balance of the harms and benefits of AAA repair than the NICE guidelines. The differences are summarised in Table 4.

Table 5. Recommendations for repair of unruptured abdominal aortic aneurysms (AAA) in the National Institute for Health and Care Excellence (NICE) 2020 guideline for Abdominal Aortic Aneurysm: Diagnosis and Management² and the European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines for the Management of Abdominal Aorto-iliac Aneurysms¹

	NICE 2020	ESVS 2019
<i>Recommendations</i>		
1.	Offer open repair unless contraindicated	EVAR should be considered in patients with reasonable life expectancy (most patients)
2.	Consider EVAR in case of hostile abdomen	Open repair should be considered in patients with long life expectancy
3.	Consider EVAR or no treatment in high risk comorbid patients	AAA repair is not recommended in patients with limited life expectancy
<i>Strength</i>		
1.	Moderate	Moderate
2.	Weak	Moderate
3.	Weak	Strong
Up to date (searches to)	2018	2018
Considers benefits, harms, and cost-effectiveness	All, with strong focus on in house cost effectiveness modelling	Mainly benefits and harms

EVAR = endovascular aortic repair.

REPAIR OF UNRUPTURED AAAs

The NICE committee viewed long-term survival and cost-effectiveness as the key outcomes. NICE recommends open repair as the first-line surgical treatment method for patients with unruptured AAAs, unless open repair is contraindicated (1.5.3). Endovascular repair (EVAR) is considered an alternative method in patients with abdominal co-pathology (1.5.4). EVAR or conservative treatment also can be considered in patients with anaesthetic risks and/or comorbidities that contraindicate open repair (1.5.5). The cornerstone for these recommendations is a 2014 Cochrane systematic review¹⁶ of four RCTs comparing open repair and EVAR for infrarenal AAA, recently updated with more recently published long term follow up data of three of the included RCTs (UK EndoVascular Aneurysm Repair trial 1 [EVAR-1], Open versus Endovascular Repair trial [OVER], Dutch Randomised Endovascular Aneurysm Management trial [DREAM]). In addition, great emphasis was placed on new “in house” UK specific cost utility modelling. In a cohort for whom open repair is a suitable option this NICE model found elective EVAR to be dominated by open repair, producing fewer quality adjusted life years (QALYs) at a higher total cost. In a population for whom open repair is not a suitable option, EVAR was not cost effective *versus* offering no AAA repair. NICE also assessed more recent (up to 2019) observational evidence than the RCTs but found no change over time for the relative differences between EVAR and open repair. The NICE committee recognises that EVAR has a superior outcome in the short term, but in the overall assessment long term outcome and cost aspects are considered of greater importance.

The ESVS GWC recognises the rapid technological and medical development that has occurred since the trials were conducted. This applies to new generations of stent grafts currently being used, a shift towards a percutaneous approach under local anaesthesia, the large increase of elderly people being treated with good results, and the

development of less aggressive follow up and re-intervention policies. Therefore, the ESVS GWC argued that the earlier RCTs comparing open repair and EVAR are partly outdated and therefore also considered evidence from more recent registry studies and other observational studies in their overall evaluation. Despite evidence from multiple RCTs and meta-analyses, representing the highest level of evidence, the existing level of evidence was rated as moderate (Level B). Furthermore, the ESVS guidelines focused on clinical effectiveness rather than cost-effectiveness. The ESVS guidelines also acknowledged the complexity of the decision process when and how an AAA is to be operated on and emphasises the importance to allow some degree of freedom for individualised decision making, respecting patient choice whenever possible. According to the ESVS GWC, the overall assessment of the evidence indicates a significant short term survival benefit for EVAR over open repair, with a similar long term outcome up to 15 years of follow up. Yet, there are indications that an increased rate of complications may occur after 8–10 years with earlier generation EVAR devices and uncertain durability of current devices. Thus, the ESVS guidelines recommend that EVAR should be considered the preferred treatment modality in most patients (Recommendation 60), while open repair should be considered first strategy in younger, fit patients with a long life expectancy > 10–15 years (Recommendation 61). Conversely, elective AAA repair is not recommended in patients with a limited life expectancy (Recommendation 62), for example in patients with terminal cancer or severe cardiac failure. The ESVS guidelines also specify the need for accurate long term follow up data of newer generations of stent grafts based on existing platforms, such as low profile devices with unclear durability (Recommendation 57), and issue a strong negative recommendation against the use of new, yet unproven, technologies, such as endovascular sealing, in clinical practice outside ethically approved trials (Recommendation 58).

Table 6. Recommendations concerning the use of endovascular repair for abdominal aortic aneurysm (AAA) rupture in the National Institute for Health and Care Excellence (NICE) 2020 guideline for Abdominal Aortic Aneurysm: Diagnosis and Management² and the European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines for the Management of Abdominal Aorto-iliac Aneurysms¹

	NICE 2020		ESVS 2019	
	Infrarenal AAA	Complex AAA	Infrarenal AAA	Complex AAA
Recommendation	Consider EVAR or open repair	Do not use EVAR except in RCT	EVAR is recommended as a first option	Open repair or EVAR may be considered
Strength	Weak	Strong	Strong	Weak
Caveats	EVAR provides more benefit for women and men aged > 70 y Open repair better for men aged < 71 y		For patients anatomically suitable for EVAR	Depends on local circumstances
Searches to	May 2017	December 2017	May 2018	May 2018
Considers benefits, harms, and cost effectiveness	Considers mainly 1–3 y survival and cost-effectiveness Sex specific analyses	No relevant evidence cited	Considers mainly mid to long term survival	Considers short term survival and sealing technology

EVAR = endovascular aortic repair; RCT = randomised controlled trial.

In summary, NICE bases the recommendation of an open repair first strategy on a rigorous methodology prioritising RCT evidence and UK specific economic modelling, while the ESVS guidelines reflect a more contemporary pan-European setting, and therefore have also taken into account more recent observational data, which has resulted in an EVAR first recommendation (see Table 5).

REPAIR OF RUPTURED AAAs

The NICE writing committee agreed that the two most important outcomes to evaluate were long term survival (with best possible quality of life) and low re-intervention rates. The review was based only on published literature and NICE economic modelling, with no external testimonies or other sources of data being used. In searches up to August 2017, the principal source of evidence was the Cochrane review, which included four RCTs with outcomes to one year of follow up.¹⁷ In updated searches, to December 2017, no eligible evidence was identified for repair of complex AAA ruptures. The review considers only open repair and EVAR, with endovascular sealing technologies being non-explicitly excluded. The headline recommendation (1.61) of the 2020 NICE guidelines is to consider EVAR or open surgical repair for people with a ruptured infrarenal AAA: a weak recommendation. They suggest two provisos: firstly, that for most people, especially men aged >70 years and women of any age, EVAR provides more benefit than open repair; and, secondly, for men aged <71 years, open surgical repair is likely to provide the better management. Two other recommendations (1.6.2 and 1.6.3) expand on the headline recommendation: the weak recommendation to consider open repair in persons anatomically unsuitable for standard EVAR and the moderate strength recommendation not to offer complex EVAR outside of a RCT of complex EVAR *versus* open repair.

In contrast to other areas of the 2020 guideline, sex specific analyses were conducted. Economic modelling by

the health economists at NICE (principally using the Immediate Management of Patients with Rupture: Open Versus Endovascular Repair [IMPROVE] trial three year outcomes and resource data, and other UK cost sources) showed that an EVAR strategy was likely to be cost effective in all women (incremental cost effectiveness ratio, < £20 000 per QALY). However, for men, their modelling indicated that open surgery would be cost effective for those aged <71 years. The committee did debate the issue of maintaining an appropriate skill base if recommending EVAR for ruptures but not for elective repair. However, they were clear that EVAR for ruptures should be recommended.

The committee for the ESVS 2019 guidelines also considered that mid to long term survival after repair of rupture was probably the most important outcome. The final recommendation (74) in Chapter 5 is that in patients with suitable anatomy, EVAR is recommended as a first option, without any caveats for groups of specific age or sex. This is a strong recommendation based on an individual patient data meta-analysis of three of the four trials included in the Cochrane review and the three year outcome data of the IMPROVE trial,^{18,19} and being concordant with numerous observational studies. The Cochrane review by Badger *et al.*¹⁷ was not prioritised in formulating the guidelines. There was also mention that some specialist units obtain good results when using EVAR for patients who do not have aortic anatomy suitable for standard EVAR. The management of ruptured juxtarenal AAA is considered separately in Chapter 7, where a weak recommendation (99) that open or endovascular repair may be considered, depending on individual patient factors and local conditions. This evidence was based on retrospective single centre reports of the use of surgeon modified grafts and a commercially available branched graft and multi-centre experience with parallel graft technology.^{20–22}

The major differences between the two sets of guidelines are summarised in Table 6.

ELECTIVE REPAIR OF COMPLEX (JUXTARENAL) AAAs

The definitions of the condition are different in the two guidelines. NICE refers to complex AAAs as AAAs requiring non-standard AAA repair, including internal iliac artery involvement, while the ESVS guidelines only discuss juxtarenal AAAs and consider iliac artery aneurysms separately in Chapter 8. Both acknowledge the limited evidence in these areas.

NICE only considered observational studies that attempted to account for differences in case mix between EVAR and open surgery repair cohorts. They cumulated the evidence for established endovascular techniques such as fenestrated, parallel, and iliac branch grafts. NICE conducted simple cost effectiveness modelling based on data extrapolated from their interpretation of the standard AAA repair. As standard EVAR was not considered as cost-effective (see earlier section on elective repair) the significantly more expensive stent grafts used for complex EVAR made these technologies even more unlikely to be cost effective. Therefore, NICE makes a weak recommendation (1.5.6) only to use endovascular techniques for the repair of a complex AAA when it is undertaken as part of research or audit to determine the clinical and cost effectiveness *versus* open repair.

The ESVS guidelines describe separately various established complex endovascular techniques, such as fenestrated EVAR and parallel graft techniques, and also specifically address new innovative endovascular techniques, such as endovascular sealing and endostapling. The ESVS guidelines are more detailed than the NICE guidelines regarding surgical methods and advocate an individualised approach with open surgery and complex endovascular techniques as complementary methods, depending on patient characteristics, patient preference, and local expertise (recommendation 95). Nevertheless, the moderate strength

recommendation 96 is as follows: “in complex endovascular repair of juxtarenal AAA, endovascular repair with fenestrated stent grafts should be considered the preferred treatment option when feasible”. The ESVS guidelines also consider the issue of centre volume and make a strong recommendation for repairs to be centralised to specialised high volume centres that can offer both complex open and complex endovascular repair for treatment of complex AAA (recommendation 94): this aspect is not addressed in the NICE guidelines.

Therefore, differences between the guidelines are likely to be attributed to the different definitions of the condition, the wider range of techniques, expert opinion input, and aspects considered by the ESVS guidelines and the focus of the NICE guidelines on cost-effectiveness: these are summarised in [Table 7](#).

DISCUSSION

Most of the differences in the recommendations of the NICE 2020 and ESVS 2019 guidelines for AAA can be attributed to their different perspectives and methodology ([Table 1](#)). NICE guidelines are directed at healthcare practitioners, providers, patients, and their families or carers in the UK, being respectful the right of patients to be involved in discussions and make informed decisions about their care. NICE guidelines have a strong health economic perspective, rely heavily on randomised trials for evidence, and are supported by professional staff, which allows all individual pieces of evidence to be graded. Their in-house economic modelling leads them to favour open repair for elective AAA cases and for ruptures in men aged <71 years. The NICE guidelines for AAA have taken a long time to be published (almost five years since the inception of the committee), so that some of their recommendations for women, particularly concerning screening and the

Table 7. Recommendations on elective repair of complex or juxtarenal aneurysms in the National Institute for Health and Care Excellence (NICE) 2020 guideline for Abdominal Aortic Aneurysm: Diagnosis and Management² and the European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines for the Management of Abdominal Aorto-iliac Aneurysms¹

	NICE 2020	ESVS 2019
<i>Recommendations</i>		
1.	Considers open repair preferable	Open repair or endovascular techniques may be considered
2.		Fenestrated EVAR should be the preferred endovascular technique
3.		Repairs are centralised to high volume centres
<i>Strength</i>		
1.	Weak	Weak
2.		Moderate
3.		Strong
<i>Caveats</i>		
1.	EVAR should only be used as part of prospective research to evaluate its clinical and cost-effectiveness vs open repair	Depends on local and patient circumstances
Up to date (searches to)	2019	May 2018
Considers benefits, harms, and cost effectiveness	All, with cost effectiveness modelling based on data extrapolated from standard AAA repair studies	Considers an individual approach to patients based on local circumstances

EVAR = endovascular aortic repair; RCT = randomised controlled trial.

intervention threshold for elective repair do not rely on the most recent evidence, or suffer from women being under-represented in randomised trials. The NICE guidelines committee was multidisciplinary, with a resulting emphasis on patient consultation but did not include specialists using some of the recent technological and other advances in AAA repair and management. This latter may explain some of the differences in the recommendations for complex or juxtarenal AAA repair: NICE did not find any quality eligible evidence to support the use of endovascular techniques and did not consider the important service issue of centre volume for these repairs.

In contrast, the ESVS AAA guidelines were developed for vascular surgeons to support best clinical practice across Europe, with its still wide range of health economies and health infrastructure. The guidelines are developed by experts in their field but without any professional support for literature searching and evidence grading. While the evidence from randomised trials is considered the best quality evidence, some of the more recent evidence from registries and other observational studies also assumes considerable importance. However, there is no attempt to rate the individual quality of either randomised trials or observational studies, as is done for the NICE guidelines. Therefore, it must be accepted that the NICE methodology is more rigorous than that used for the ESVS AAA guidelines. However, the use of experts does allow use of recent and prepublication information, knowledge of new technologies in evaluation, and permits a wider range of relevant clinical practice questions (including service issues, and iliac and mycotic aneurysms) to be addressed in the ESVS guidelines. Sadly, there is less time and resources allocated to the ESVS guideline committee for discussion and formulation of the questions *versus* the NICE guideline committee. Similarly, there are no resources to support other disciplines contributing to the ESVS guidelines, although the AAA guidelines were innovative in having a section on information for patients which was developed with, and approved by, a patient focus group in the UK.

Occasionally, both sets of guidelines stray beyond the expertise of the relevant committees. For instance, both guidelines make recommendations about pain control and/or anaesthesia without any input from experts in these areas.

The issue of what makes a guideline user friendly is seldom discussed. The presentation and reporting styles of the NICE and ESVS guidelines are very different and different again from the clinical practice guidelines of the Society for Vascular Surgery in North America. The ESVS guidelines also are supported by an App. In the future, it might be important to identify the most user-friendly format for practitioners and trainees.

How many recommendations can be assimilated and understood from a set of guidelines? In the NICE AAA guidelines, there are 46 recommendations (plus five warnings and five referrals to other guidelines), covering eight separate topics compared with 125 recommendations covering a different set of nine topics in the ESVS guidelines

(the topics are summarised in [Table 1](#)). The language used by the ESVS guidelines is easy to understand by non-native English speakers, whereas the specific language used to frame NICE recommendations is more difficult to understand and directed at native English speakers: the NICE language is best understood after referral to other documents on the NICE website. Each guideline has strengths and weakness, and their comparison might provide suggestions for improving the process of ESVS guideline development. The suggestions are likely to include a more multidisciplinary approach, prospectively identifying the key questions to be addressed and their outcomes and standardising the evidence search and appraisal methods used.

In summary, unless there is greater harmonisation of guideline perspectives and methodology controversy is bound to arise. It is principally the differences in perspective and methodology between the NICE 2020 and ESVS 2019 guidelines that has resulted in some discordant recommendations.

CONFLICTS OF INTEREST

J.T.P. was a member of the ESVS 2019 AAA Guidelines writing committee. A.W. chaired the ESVS 2019 AAA Guidelines writing committee and currently is a standing member of the ESVS Guidelines Committee.

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